

# FLUID POWER



FREUDENBERG-NOK  
SEALING TECHNOLOGIES

**FREUDENBERG-NOK**  
INNOVATING TOGETHER



# UNLEASH THE POWER

The fluid power industry is not only solidifying a hold on current applications, it is unleashing its knowledge into ever-increasing frontiers. Excessive temperature and diverse fluids often create problems for this field. Overall, new materials and designs are necessary to meet the increasing industry requirements. Smaller components with higher pressures combined with hotter ambient temperatures continue to drive the demand for better-performing seal systems. At Freudenberg-NOK Sealing Technologies, we create sealing solutions that offer a broad application range and thus minimize demand for equipment solely designed for specific environmental conditions.

Freudenberg knows the harsh environments that test your hydraulic projects, which is why we've developed sealing designs with materials like special PTFE and polyurethane compounds that set new industry standards. Our innovations have led to the development of accumulators with operating pressure up to 20,000 psi, radial shaft seals that withstand up to 2,400 psi (peak),

along with seals and custom-molded components for pneumatics that increase efficiency, providing a more reliable operation.

Materials like our polyurethane AU 30000 allow for operation pressures up to 7,250 psi, stability in temperatures from  $-31^{\circ}\text{F}$  to  $248^{\circ}\text{F}$ , and resistance to mineral and biodegradable fluids. Our materials expertise, coupled with our robust designs and quality standards, enable our seals to provide reliable operation and ensure long service life.

By providing engineering support, we help to diagnose your entire application system. Freudenberg's Finite Element Analysis (FEA) tests individual parts and surrounding components. Our reliable product testing includes: fluid compatibility at temperature, environmental aging, physical properties, static/dynamic testing at accelerated conditions, and durability. We have even designed customer-specific test equipment and protocols to ensure that seals are optimized for unique operating conditions.

## REAL-WORLD SOLUTIONS

Always delivering superior customer service, our network offers the world's largest product range from a single source, materials and manufacturing expertise, along with revolutionary solutions for your next sealing application. We drive

innovation with research, development, and production teams integrated across our global operations to meet the demands of worldwide and local markets.

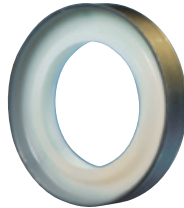


# HYDRAULIC CYLINDERS

Achieve the ultimate in the generation, control, and transmission of power while delivering maximum reliability and durability with our reliable sealing components.

## WIPERS

Our wipers deliver protection against contaminants and environmental influences. With or without metal reinforcement, as well as double wipers with or without pressure relief, we have the product for your application.



## PISTON SEALS

Offered in a variety of materials, these seals provide the lowest possible friction without drift. They deliver intense strength against gap extrusion and can be precisely adjusted to a particular application.



## ROD SEALS

Meeting expectations for maximum reliability, service life, and functionality, our rod seals are used in every kind of cylinder and application. Our seals assist with extreme pressurization, protection against the elements, and premature failure of the primary and secondary seals.



## GUIDE RINGS

Our fabric-based laminate guide rings offer maximum reliability and longevity. They withstand the capacity to absorb strong transverse forces even over a short guide distance, while keeping frictional losses low.



# HYDRAULIC PUMPS AND MOTORS

When you are working in extreme conditions, reset the bar for reliable rotary hydraulic power and exceed your customers' expectations with our innovative sealing solutions.

## SIMMERRING SHAFT SEALS

Premium quality Simmerring seals have a proven record of durability and longevity in a variety of low- and medium-pressure applications. They provide excellent wear resistance in various environments and are the optimum choice for an affordable price without compromising reliability.



## SIMMERRING PRESSURE SEALS

These pressure Simmerrings are designed to prevent pressure deformation via a combination of shorter flex section, flex section support features, reinforced metal cases, defined lip geometries, and proprietary wear-resistant materials. This ensures longer service life and durability, even in high-pressure environments.



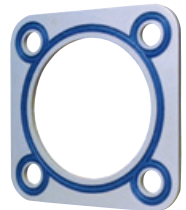
## ENCODERS

Encoders utilize alternating positive and negative bands to precisely measure shaft position. Our encoders provide a constant signal at all speeds, zero speed detection, and simple assembly due to their state-of-the-art design.



## STATIC SEALS

Offered in a variety of materials, our gaskets prevent leakage from contaminants. Plate seals aid in preventing premature seal degradation, and reduce the number of components needed, while simplifying housing machining.







# HYDRAULIC AGGREGATES

We help you build reliable hydraulic aggregates that assist in the most complicated systems and will perform to the highest quality standards.

## DIAPHRAGM ACCUMULATORS

Our diaphragm accumulators provide excellent energy storage with unique materials that cover wide temperature ranges and provide longer service life. The next generation of lightweight accumulators combines the effectiveness of aluminum with the functional ability of an accumulator to maximize the function/cost ratio.



## PISTON ACCUMULATORS

Offered in a wide range of materials, seal types, and configurations, these accumulators exceed customer expectations. Our piston-type hydro-pneumatic accumulators can meet the diverse needs of industry with standard or custom designs.



## BLADDER ACCUMULATORS

Available in a variety of sizes that cover a broad pressure range, our bladder accumulators are designed for quick response to fluid demands. Our product consists of high-grade elastomeric bladders, components that use inert gas versus fluid. They provide noise reduction and improved fluid system response times.



## O-RINGS

Whether you need specialized or off-the-shelf standard seals, we have them. Delivering optimum performance and value, our O-rings are offered in an assortment of materials that handle extreme temperatures and battle contaminants.





# PNEUMATICS

When your application calls for increased efficiency, look to our wide range of custom and standard pneumatic seals to make a significant impact.

## COMBINATION SEALS

Combining wiping and rod-sealing function in one part, the Combination Seal is the ultimate seal for enhanced dirt protection. The materials are designed for the specific demands of pneumatic applications. The seal is proven to increase service life and reduce warranty claims, and is perfect in applications with limited space.



## PISTON SEALS

Freudenberg–NOK piston seals offer specialized geometries with rounded sealing edge to ensure an excellent sealing function over the cylinder's life-time, while also maintaining the lubricating layer at a pressure up to 145 psi.



## DAMP AND SEAL

Our 3-in-1 damper seal offers mechanical damping in the end position, static sealing of the cylinder, and pneumatic damping of the piston stroke by throttling the air. With its innovative design and highly stressable material, it offers outstanding damping characteristics.



## CUSTOM-MOLDED COMPONENTS

Tested to meet rigorous requirements, our custom molded parts have tolerances that enable optimum performance with the possibility of miniaturization and great noise-dampening as needed. They are available in numerous elastomer materials that improve longevity and efficiency in your specific applications such as solenoid plungers.



# PORTFOLIO

Seal Type	Hydraulic Cylinders	Hydraulic Pumps and Motors (including Piston Motors)	Hydraulic Aggregates	Pneumatics
Wipers	+	+		
Rod seals	+	+		
Piston seals	+	+		+
Guide rings	+	+		
Pressure oil seals		+		
Standard oil seals		+		
Encoders		+		
Gaskets and face plate seals		+	+	
Diaphragm accumulators			+	
Piston accumulators			+	
Bladder accumulators			+	
O-Rings	+	+	+	+
Combination seals				+
Damp and Seal				+
Custom-molded components				+

## CERTIFICATIONS

- EN ISO 9001: 2008
- EN ISO 14001: 2004
- AS9100
- AS9120
- A2LA Laboratory
- EN9100
- ASME "U"
- CE/PED
- Chinese SELO
- Project-based certification for accumulators available upon request

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